

2013 ASEE Annual Conference Program

# 2013 ASEE

June 23-26, 2013  
Georgia World Congress Center  
Atlanta, GA

## Annual Conference Program Final Conference Program & Proceedings







# Welcome To Atlanta, Georgia!

I look forward to seeing you in the historic and beautiful city of Atlanta at the 2013 ASEE Annual Conference. Both this historic city and our program can be characterized as exciting, serving a plethora of professional interests and activities.

We will be in Atlanta during the year of our 120th anniversary and we plan to make this a very special conference. Whether you stay in the city or its suburbs, I am certain that you will be impressed with its cosmopolitan atmosphere and historical attractions.

As in the past, this year's conference benefits from outstanding planning by a team that chose relevant topics fostering different types of engagement in a variety of venues. Let me highlight just a few sessions, beginning with Sunday. The ASEE Division Mixer at the Georgia World Congress Center offers a great networking opportunity, allowing you to mix with members of your own and other divisions. This event gives divisions an opportunity to showcase and promote themselves to prospective members. The Board of Directors hosts an afternoon welcome titled "Greet the Stars," where first-time attendees can learn about the conference while tapping into one of the most valuable assets of ASEE membership—the network of professionals sharing the same commitment to engineering education.

Main Plenary I on Monday morning will feature a talk by Al Gomez, the Chief Academic Officer of The STEM Academy. During this session, I will have the pleasure of introducing you to our Executive Director, Norman Fortenberry, who will have some words to say about the state of our society.

Main Plenary II on Tuesday morning will be moderated by the 2013-2014 ASEE President, Kenneth F. Galloway, who will share his vision for the coming year. Following this talk, the Best Professional Interest Council, Zone, and Best Conference Papers will be featured, with the winning authors sharing highlights. He will then introduce the Corporate Member Council Industry Leader speaker, Alan Todd, CEO of CorpU, a leading corporate university research and executive education company.

The Distinguished Lecture Series on Wednesday is designed to broaden perspectives and deepen understanding on topics relevant to engineering and engineering technology education. This year attendees will have the opportunity to hear the insights of industry and academic leaders as they share ideas on Open Access and Open Educational Resources, Student Development: An Alternative to Sink or Swim, The Innovation Imperative, Rigor/Us: Merit Standards and Diversity in Engineering Education Research and Practice, and Exploring the Role of Men in Building a Culture of Full Inclusion Within Engineering Education and the Profession.

Throughout the conference, attendees can focus on a particular division, attend business meetings, or explore the Exposition Hall. In particular, I encourage you to make room in your schedule for the

Focus on Exhibits Welcome Reception (Sunday), the Focus on Exhibits Brunch and Ice Cream Social (Monday), and the Focus on Exhibits Closing Lunch and Meet the Board Forum (Tuesday).

Finally, the conference culminates in the annual ASEE Awards Banquet. The Banquet program allows us to celebrate the success of our 120th Society Year, thank those who made it possible, such as the outgoing Board Members, including Don Giddens, acknowledge our national award recipients, welcome the new ASEE Fellows, and introduce the 2013-2014 Board of Directors. It's a grand event and I hope you will join us in the celebration.

The conference is the result of much hard work and commitment by volunteers and dedicated and professional staff. I extend my thanks to each person who contributed talent and effort to plan, review papers, design sessions, coordinate panels, and set agendas. Because of you, we will have an

extraordinary event filled with many opportunities to learn with and from each other, serve our members, and contribute to the advancement of engineering and engineering technology education. I look forward to seeing you in Atlanta.



**Walter W. Buchanan**, ASEE President 2012-2013

# 2013 ASEE PROGRAM CHAIRS



ASEE would like to acknowledge and thank the 2013 ASEE Program Chairs for all their hard work and dedication.

## **Aerospace Division**

Kristi J Shryock  
Texas A&M University

## **Architectural Engineering Division**

Suining Ding  
Indiana University Purdue University

## **Biological and Agricultural Engineering Division**

Carmine C. Balascio  
University of Delaware

## **Biomedical Engineering Division**

J. Aura Gimm  
Duke University

## **Chemical Engineering Division**

Daniel Lepek  
The Cooper Union

## **Civil Engineering Division**

Matthew W. Roberts  
University of Wisconsin

## **College-Industry Partnerships**

Linda D. Krute  
North Carolina State University

## **Community Engagement in Engineering**

### **Education Constituent Committee**

Chris Swan  
Tufts University

## **Computers in Education Division**

James E. Lewis  
University of Louisville

## **Construction Engineering Division**

John Hildreth  
University of North Carolina, Charlotte

## **Continuing Professional Development Division**

Pamela L Dickrell  
University of Florida

## **Cooperative Education Division**

Chris Plouff  
Grand Valley State University

## **Corporate Members Council**

Chris Higa

## **Design in Engineering Education Division**

Susannah Howe  
Smith College

## **Division of Experimentation and Laboratory Oriented Studies**

Gregory Mason  
Seattle University

## **Educational Research and Methods Division**

Elliot P. Douglas  
University of Florida

## **Electrical and Computer Engineering Division**

Christopher S. Greene  
University of St. Thomas

## **Energy Conversion and Conservation Division**

Patrick A. Tebbe  
Minnesota State University

## **Engineering and Public Policy Division**

Martin S. High  
Oklahoma State University

## **Engineering Deans Council**

Megan Marsico  
ASEE Public Affairs Department

## **Engineering Design Graphics Division**

Michael D. Stewart  
Georgia Tech

## **Engineering Economy Division**

Neal Lewis  
University of Bridgeport

## **Engineering Ethics Division**

Christopher J. Bise  
West Virginia University

## **Engineering Leadership Constituent Committee**

Ronald J. Bennett  
University of St. Thomas

## **Engineering Libraries Division**

Adriana Popescu  
Princeton University

## **Engineering Management Division**

S. Jimmy Gandhi  
Stevens Institute of Technology

## **Engineering Research Council**

Ralph H. Zee  
Auburn University

## **Engineering Technology Council**

Dr. Ken Burbank  
Purdue University

# 2013 ASEE PROGRAM CHAIRS

**Engineering Technology Division**

Rasoul Saneifard  
Texas Southern University

**Entrepreneurship Division**

William M. Jordan  
Baylor University

**Environmental Engineering Division**

Junko Munakata Marr  
Colorado School of Mines

**First-Year Programs Division**

Robin A. M. Hensel  
West Virginia University

**Graduate Studies Division**

Hamid Johari  
California State University, Northridge

**Industrial Engineering Division**

Rick Olson  
University of San Diego

**Information Systems Division**

Reza Sanati-Mehrizy  
Utah Valley University

**Instrumentation Division**

Asad Yousuf  
Savannah State University

**International Division**

Nick Safai  
Salt Lake City Community College

**K-12 and Pre-College Engineering Division**

Susan K. Donohue  
University of Virginia

**Liberal Education Division**

Atsushi Akera  
Rensselaer Polytechnic Institute (RPI)

**Manufacturing Division**

Christopher P. Pung  
Grand Valley State University

**Materials Division**

Michael Kessler  
Iowa State University

**Mathematics Division**

Robert Talbert  
Grand Valley State University

**Mechanical Engineering Division**

John-David S. Yoder  
Ohio Northern University

**Mechanics Division**

Rungun Nathan  
Pennsylvania State University

**Minorities in Engineering Division**

Monica Farmer Cox  
Purdue University

**Multidisciplinary Engineering Division**

Steve G. Northrup  
Western New England University

**New Engineering Educators Division**

Jessica A. Kuczynski  
Century College

**NSF Grantees Poster Session**

Larry Genalo  
Iowa State University

**Ocean, Marine & Coastal Engineering Division**

Robert W. Whalin  
Jackson State University

**Physics & Engineering Physics Division**

Evan Lemley  
University of Central Oklahoma

**Software Engineering Constituent Committee**

James Vallino  
Rochester Institute of Technology

**Sponsored Sessions**

Page Halle  
ASEE Corporate Marketing

**Students Constituent Committee**

Katherine G. Nelson  
Arizona State University

**Systems Engineering Division**

Fernando Garcia Gonzalez  
Texas A&M International University

**Tau Beta Pi**

Curtis D. Gomulinski  
Tau Beta Pi Association, Inc.

**Technological Literacy Constituent Committee**

Steven R. Walk  
Old Dominion University

**Two-Year College Division**

Melvin L. Roberts P.E.  
Camden County College

**Women in Engineering Education**

Beth M. Holloway  
Purdue University





### From Idea to Impact: A Case Study for Sustainable Innovation

Dr. Daniel Raviv, Florida Atlantic University

Dr. Alex Kotlarchyk

### Bending Moments to Business Models: Integrating an Entrepreneurship Case Study as Part of Core Mechanical Engineering Curriculum

Dr. Mark Schar, Stanford University

Dr. Sheri Sheppard, Stanford University

Ms. Samantha Brunhaver, Stanford University

Mr. Mark Cuson

Michelle Marie Grau, Stanford University

### A Qualitative Study Into The Innovation And Technology Transfer

#### Experience Of A Micro-Manufacturer Within A University-Industry Collaboration Context In Regional Australia

Dr. Steven Chingnam Goh, University of Southern Queensland

### Reel Entrepreneurs: Illustrating Entrepreneurship with Feature Films

Dr. Zbigniew J. Pasek, University of Windsor

### Smart Phone App Development: A Multi-College Approach

Dr. Ravi T. Shankar, Florida Atlantic University

Mr. Francis Xavier McAfee, Florida Atlantic University

Dr. Michael S Harris, Florida Atlantic University

Dr. Ravi S Behara, Florida Atlantic University

of Energy, Environmental, Biological and Medical Engineering

Prof. Urmila Ghia, University of Cincinnati

### M443 - FUTURE OF GRADUATE EDUCATION: AN INDUSTRY PERSPECTIVE

12:30 p.m. - 2:00 p.m., Georgia World Congress Center, A316

**Sponsor: Graduate Studies Division**

**Moderator: Mohammad Noori, California Polytechnic State University**

**Speaker: Ms. Lueny Morell P.E., Hewlett-Packard Corporation**

Ms. Lueny Morell, our distinguished speaker, will present her views on the future of graduate education. The presentation will be followed with a discussion on the role of industry.

### M445 - INSTRUMENTATION TECHNICAL SESSION I

12:30 p.m. - 2:00 p.m., Georgia World Congress Center, A302

**Sponsor: Instrumentation Division**

**Moderator: Asad Yousuf, Savannah State University**

Instrumentation Division Instrumentation Technical Session I

#### Linear Model Estimation of Nonlinear Systems Using Least-Squares Algorithm

Dr. Alireza Rahrooh, Daytona State College

Dr. Walter W. Buchanan P.E., Texas A&M University

Dr. Remzi Seker, Embry-Riddle Aeronautical University

#### Portable Photovoltaic Laboratory for In-Service Teacher Workshops

Prof. Kenneth E. Dudeck, Pennsylvania State University, Hazleton Campus

Dr. Wieslaw Grebski, Pennsylvania State University, Hazleton Campus

#### Remote Demonstration Of Packaging

Prof. Akram Hossain, Purdue University, Calumet (Tech)

Dr. Mohammad A. Zahraee, Purdue University, Calumet (Tech)

#### Enhancements to a Propulsion Demonstrator

Dr. Rafic Bachnak, Texas A&M International University

Miss Sofia Carolina Maldonado, Texas A&M International University

Dr. Fernando Garcia Gonzalez, Texas A&M International University

#### Wireless Robot

Dr. Asad Yousuf, Savannah State University

Mr. Jarvis Brewer T, Savannah State University

Dr. Mohamad A. Mustafa, Savannah State University

Mr. Alberto G De La Cruz, Savannah State University

Faraz Muhammad Yousuf, 3-D Imaging Developer

### M442 - FPD 2: RETENTION

12:30 p.m. - 2:00 p.m., Georgia World Congress Center, A309

**Sponsor: First-Year Programs Division**

**Moderator: Richard Freuler, Ohio State University**

The papers presented in this session focus on factors and challenges related to first-year retention in undergraduate engineering.

#### Retention in a First-Year Program: Factors Influencing Student Interest in Engineering

Dr. Lizzie Santiago, West Virginia University

#### The Effect of Required Introduction to Engineering Courses on Retention and Major Selection

Dr. Marisa Kikendall Orr, Louisiana Tech University

Dr. Catherine E. Brawner, Research Triangle Educational Consultants

Dr. Matthew W. Ohland, Purdue University, West Lafayette

Dr. Richard A. Layton, Rose-Hulman Institute of Technology

#### A Longitudinal Model To Increase The Enrollment And Graduation Of Alaska Native/American Indian Engineering Undergraduates

Dr. Herbert P. Schroeder, University of Alaska, Anchorage

Dr. Linda P. Lazzell, University of Alaska, Anchorage

#### Enhancing Retention and Achievement of Undergraduate Engineering Students

Dr. Anant R. Kukreti, University of Cincinnati

Mr. Kenneth Simonson, University of Cincinnati

Ms. Kristen Strominger, University of Cincinnati - School



# Conference Sessions



MONDAY, JUNE 24

## M516 - TABLETS, MOBILE AND TECHNOLOGY

2:15 p.m. - 3:45 p.m., Omni CNN Center Hotel, Omni - Redwood

**Sponsor:** Computers in Education Division

**Moderators:** Wanda Eugene, Clemson University; Joseph Tront, Virginia Tech

The use of Tablet PCs, Slate devices and other mobile technology is investigated in this session.

Wireless Tablet PCs for enhanced teaching at an Australian regional university teaching both campus and distance modes

Dr. Steven Chingnam Goh, University of Southern Queensland

Dr. Linda Ann Galligan, University of Southern Queensland

Dr. Harry Ku, University of Southern Queensland

Using Mixed Mobile Computing Devices for Real-Time Formative Assessment

Prof. Frank V. Kowalski, Colorado School of Mines

Susan E. Kowalski, Colorado School of Mines

Dr. Tracy Q. Gardner, Colorado School of Mines

Building Technology Fluency: Fostering Agents of Change

Dr. Wanda Eugene, University of North Carolina - Charlotte

Dr. Shaundra Bryant Daily, Clemson University

Tiffany Barnes, NC State University

Richard Burns, West Chester University

Evaluation of the VTEXT Electronic Textbook Framework

John Oliver Cristy, Virginia Tech

Prof. Joseph G. Tront, Virginia Tech

## M517 - INFORMATION AND NETWORK SECURITY

2:15 p.m. - 3:45 p.m., Georgia World Congress Center, A303,

**Sponsor:** Computing & Information Technology Division

**Moderators:** Richard Helps, Brigham Young University; Abul Azad, Northern Illinois University

This session will address recent developments in information security and network protection, and their use in industry and academia.

Internet Accessible Remote Experimentation with Integrated Learning Management System

Dr. Abul K. M. Azad, Northern Illinois University

Munish Sharma, Northern Illinois University

Experiences Developing International Partnerships for Education and Research in Computing

Mr. Jason St. John, Purdue University, West Lafayette

Prof. Thomas J. Hacker, Purdue University, West Lafayette

Prof. Raymond A. Hansen, Purdue University

Ms. Natasha N. Nikolaidis, Purdue University

Robert M Trinkle, Purdue University, West Lafayette

IPv6 Security Course with Remote Labs - Design and Development

Mr. John Pickard, East Carolina University

Dr. Te-Shun Chou, East Carolina University

Dr. Philip J Lunsford II P.E., East Carolina University  
John Spence,

Piloting a New Curriculum: A View from the Trenches

Dr. Krystal S. Corbett, Cyber Innovation Center

Dr. Chuck Gardner, New Orleans Military and Maritime Academy

Mr. Anthony Joseph Taffaro Jr., New Orleans Military and Maritime Academy

Mr. Marvin Nelson, Benton High School

A Study of Application of Data Mining Algorithms In Healthcare Industry

Dr. Reza Sanati-Mehrziy, Utah Valley University

Jeffrey H Wright

Dr. Afsaneh Minaie, Utah Valley University

Dr. Ali Sanati-Mehrziy

Paymon Sanati-Mehrziy, Icahn School of Medicine at Mount Sinai

## M518 - BUILDING BIM INTO CONSTRUCTION CURRICULA

2:15 p.m. - 3:45 p.m., Georgia World Congress Center, A412

**Sponsor:** Construction Division

**Moderator:** Clifton Farnsworth, Brigham Young University

The presentations in this session focus on the integration of building information modeling (BIM) topics and techniques into the curricula, both broadly across the curriculum and within specific courses.

Energy Modeling/Simulation Using The BIM Technology In The Curriculum Of Architectural And Construction Engineering And Management

Dr. Hyunjoo Kim, The University of North Carolina at Charlotte

Strategy to Incorporate BIM Curriculum In Planning And Scheduling Classes

Dr. Marcel Maghiar, Georgia Southern University

Ms. Sunitha Jain, Hill International

Dr. James G. Sullivan, University of Florida

From BIM to Collaboration: A Proposed Integrated Construction Curriculum

Miss Arundhati Ghosh, Arizona State University

Kristen Parrish Ph.D., Arizona State University

Dr. Allan Dee Chasey, Del E. Webb School of Construction, Arizona State University

Integrating Industry BIM Practices into University Curriculum

Prof. Kevin R. Miller, Brigham Young University

Dr. Clifton B. Farnsworth, Brigham Young University

Dr. Justin Earl Weidman, Brigham Young University

Monday